

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,931	<b>Applicant(s)</b> SUGIMOTO ET AL.	
	<b>Examiner</b> WILLIAM P. BELL	<b>Art Unit</b> 4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-18 is/are pending in the application.  
4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-10 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☒ Claim(s) 1,2 and 4-18 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. <u>herewith</u> .                           |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application  |
| Paper No(s)/Mail Date <u>12/22/2005</u> .  | 6) <input type="checkbox"/> Other: ____.                           |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-2 and 4-10, drawn to a master mold.

Group II, claim(s) 11-18, drawn to a method of making a master mold.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature in all groups is the master mold formed by a combination of a lithography process and a mechanical grinding process. This element cannot be a special technical feature under PCT Rule 13.2 because the element is shown in the prior art. Japanese Patent No. JP-2000-094329, already of record, teaches a master mold formed by the same combination of a lithography process and a mechanical grinding process.

3. During a telephone conversation with Carolyn Fisher on 28 August 2008, a provisional election was made with traverse to prosecute the invention of group I, the master mold, claims 1-2 and 4-10. Affirmation of this election must be made by

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applicant in replying to this Office action. Claims 11-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP

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§ 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

### ***Information Disclosure Statement***

6. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Drawings***

7. Figures 1, 2, 3A, and 3B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

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applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **50** (see Figure 1). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

9. The disclosure is objected to because of the following informalities:
- the forming mold is incorrectly referred to as item **10** on Page 19, Line 29 and Page 22, Lines 25 and 26
  - a length of 100 m is recited on Page 23, Line 38; examiner believes this should be 100 mm

Appropriate correction is required.

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10. The use of the trademarks Tetolon® and Liston® has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

### ***Claim Objections***

11. Claim 8 is objected to because of the following informalities: the limitation “formed by selectively removing such that a fine structure pattern is formed” does not define what is being removed. For the purpose of compact prosecution, examination will be based on the assumption that this limitation should read as –formed by selectively removing said high grinding speed material such that a fine structure pattern is formed–. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuruoka (Japanese Patent No. JP-2000-094329, already of record). Regarding claim 8,

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Tsuruoka teaches a master mold comprising a support layer comprised of a material (see item **2b** in Figure 1B) and a fine structure pattern supported by said support layer (see rib structure in Figure 1D), wherein said fine structure pattern comprises a material having a higher grinding speed than the support layer material (see [0008], wherein the fine structure pattern material ("said septum mold material") has a high grinding speed ("an easily drillable material layer") and the support layer ("lower layer") has a lower grinding speed ("a difficulty drilling material layer")) and is formed by selectively removing [said high grinding speed material] such that a fine structure pattern is formed (see [0008], wherein "an easily drillable septum mold material layer, it is efficiently shaved off by a sandblast treatment").

Regarding claim 9, Tsuruoka teaches a master mold wherein the high grinding speed material is removed by sand blasting (see [0005]).

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka in view of Fister (U.S. Patent No. 4,632,898). Regarding claim 1, Tsuruoka teaches a master mold (see [0004]) comprising a support layer comprised of a material (see item **2b** in Figure 1B) and a fine structure pattern comprised of a

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material supported by said support layer (see rib structure in Figure 1D), wherein the support layer material has a lower grinding speed than the material of the fine structure pattern (see [0008]). Tsuruoka does not teach that the fine structure pattern is comprised of a glass or ceramic material. In analogous art, specifically the manufacture of a master tool for the production of articles with microstructural features, Fister teaches a master mold wherein a rib structure is created in a glass substrate by an etching process (see Column 2, Lines 29-45 and Figures 2g and 2h) so that the mother molds created from the master retain the resolution of the original structure through more generations (see Column 1, Lines 23-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the master mold taught by Tsuruoka with the glass substrate taught by Fister for the benefit of greater durability of the rib structure in the master mold.

Regarding claim 2, Tsuruoka teaches a master mold wherein the support layer is a metal material (see [0014]).

Regarding claim 4, Tsuruoka teaches a master mold wherein the mold is suitable for making plasma display panel ribs (see [0001]).

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tsuruoka and Fister as applied to claims 1 and 8 above, and further in view of Guzman (U.S. Patent No. 6,595,232). Regarding claim 5, Tsuruoka does not teach a master mold suitable for making microfluidic articles. In analogous art, specifically the manufacture of master molds containing microstructural ribs, Guzman teaches a master mold for the manufacture of microfluidic articles wherein nearly

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identical rib structures are formed (see items **C1** and **C2** in Figure 1) from glass, rather than metal, because of the enhanced chemical resistance, transparency, and easy of fabrication of glass. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the master mold taught by Tsuruoka/Fister with the master mold for microfluidic articles taught by Guzman, given that the structures involved are essentially identical. Examiner also notes that the cells created by the rib structure of a plasma display device can be reasonably interpreted as comprising microfluidic devices in that each cell serves to contain an individually controllable volume of plasma.

17. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tsuruoka and Fister as applied to claim 1 above, and further in view of Carre (U.S. Patent No. 5,853,446, already of record). Regarding claim 6, Tsuruoka does not explicitly teach a master mold with a pattern of intersection ribs, although one of ordinary skill in the art would recognize that said mold would necessarily include such a pattern since this is a known structure for a plasma display device. In analogous art, specifically the manufacture of a master mold for a plasma display device, Carre teaches a master mold with a pattern of intersecting ribs (see Figure 2), wherein the intersecting ribs form a two-dimensional array of addressable plasma cells with improved display performance. Applicant acknowledges such a two-dimensional array of plasma cells as known in the art of plasma displays (see Page 2, Lines 2-5 of instant application). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the master mold taught by Tsuruoka and

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Fister with the intersection rib pattern taught by Carre for the benefit of producing a standard grid structure for a plasma display device.

Regarding claim 7, Carre further teaches a master mold wherein the fine structure pattern comprises ribs having a rib height of 150 to 300 micrometers, a rib pitch of 150 to 800 micrometers, and a rib width of 50 to 80 micrometers (see Column 1, Lines 35-42).

18. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka as applied to claim 8 above, and further in view of Fister. Tsuruoka does not teach a master mold wherein the structural pattern is formed by chemical etching. In analogous art, specifically the manufacture of a master tool for the production of articles with microstructural features, Fister teaches a master mold wherein a rib structure is created by plasma etching, which constitutes a form of chemical etching (see Column 2, Lines 34-35), since plasma etching is effective at removing glass without significantly affecting the chromium mask. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the master mold taught by Tsuruoka with the chemical etching process taught by Fister for the benefit of providing a mold structure wherein the mask would be vulnerable to sandblasting but not to chemical etching.

***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Toyoda (U.S. Patent 6,333,142) discloses a master mold for formation of plasma display barrier ribs similar to the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM P. BELL whose telephone number is (571)270-7067. The examiner can normally be reached on Monday - Thursday, 7:30 am - 5:00 pm; Alternating Fridays, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on 571-272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

wpb

***/Angela Ortiz/***

***Supervisory Patent Examiner, Art Unit 4151***